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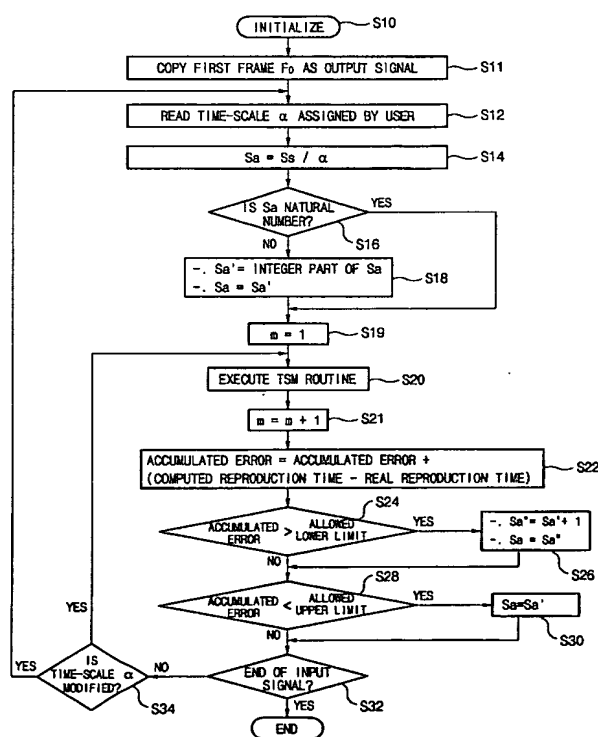
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(54) Title: TIME-SCALE MODIFICATION METHOD FOR DIGITAL AUDIO SIGNAL AND DIGITAL AUDIO/VIDEO SIGNAL, AND VARIABLE SPEED REPRODUCING METHOD OF DIGITAL TELEVISION SIGNAL BY USING THE SAME METHOD



(57) Abstract: **Problem:** A method capable of ensuring a synchronization between an audio signal and a video signal both of which are modified in time-scale is needed. **Solution:** When analysis shift  $S_a = S_s / \alpha$ , where  $S_s$  is synthesis shift and  $\alpha$  is a designated time-scale (variable speed ratio), has a decimal value, two natural numbers which are nearest to the decimal value are selected as a modified analysis shift  $S_a'$  and a compensated analysis shift  $S_a''$ , respectively. In time-scale modification of source audio samples to vary playback speed by dividing them into overlapped successive analysis windows, the modified analysis shift  $S_a'$  and the compensated analysis shift  $S_a''$  are alternately applied whenever a predetermined condition is met. The time difference between an estimated playback time and a real playback time of the time-scale modified audio signal is accumulated. The case that the predetermined condition is met is a case than an accumulated time difference goes beyond an upper threshold or a lower threshold of an allowed error range. In a processing of varying the playback speed of an AV signal, if a real variable speed ratio of a playback-speed-varied video signal is given as a target variable speed ratio of an audio signal to vary the playback speed of the audio signal, a synchronization between the video signal and the audio signal can be obtained. By applying this technology to the digital TV or TV phone, consecutive watch of the broadcasting signal for a phone-break time is possible. Catch-up for the currently received broadcasting signal is also possible through a high speed playback mode after a low speed playback mode initiated from a time of the past or the present.



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